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Teaching Introductory Economics to Students of Different Majors: Challenges and Opportunities

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Introductory economics courses have diverse pool of students with varied objectives. The programs offering introductory economics also have specific objectives in mind. This variation deserves attention to find appropriate content, teaching method and resources. This paper explores (i) the appropriateness of content, breadth and depth of economic concept provided to different disciplines, (ii) mode of delivery and teaching techniques with varying objectives and (iii) the suitability of resource materials. It is concluded that different programs need to adapt the content and teaching techniques to satisfy student needs, and a collaborative approach led by the economics instructor would be the way to go.

INTRODUCTION

Introductory economics is taught to a broad range of students seeking various career objectives and educational paths. Although the principal focus of teaching and learning introductory economics is commonly directed to the students majoring in economics, undergraduate students majoring in several liberal arts disciplines, sciences, business and engineering take introductory economics as part of their program requirements. Students in many diploma, career and certificate programs also take introductory economics mostly in their first year. In fact, the number of economics majors taking introductory economics is far outweighed by the number of non-economics majors. Saunders (1980) rightfully pointed out that there are more students enrolled in two introductory economics courses than those enrolled in all other economics courses combined. Faculty members also devote more of their class times to teach introductory courses than they do in other courses. However, for university professors, vast majority of preparation time and effort go to other courses. Preparation for introductory economics courses takes a back seat. In many cases, the responsibility of teaching introductory courses is left either with graduate students or with soon to be retired professors. The former have little opportunities and the latter have little incentive to improve teaching.

The appropriateness of content, depth, breadth and delivery of introductory economics courses vary according to the learner pool. Students in a degree program intending to major in economics or other related liberal arts disciplines or sciences typically take a sequence of two introductory courses: introductory microeconomics and introductory macroeconomics. On the other hand, students enrolled in many diploma or certificate programs or some engineering programs receive introductory economics as a single course combining contents from both microeconomics and macroeconomics, and adding extra content from financial and investment economics. Some business programs, however, require a course on intermediate microeconomics or managerial economics in addition to the two introductory level economics courses.

Introductory economics courses are commonly taught as the foundation to Bachelor-degree programs in liberal arts and business. In most cases, students take a semester-long introductory microeconomics and a semester-long introductory macroeconomics or a two-semester-long sequence of microeconomics and macroeconomics. The content, depth and breadth vary from institution to institution and from program to program, but they have certain degree of similarity. However, in many diploma programs in business or engineering, the combined microeconomics and macroeconomics is taught in a one-semester course with fewer topic areas and less rigor. Such courses are designed based on the need and appropriateness of the program, and is done either by the program alone or in consultation with the discipline of economics. A collaborative effort between the program specialists and the subject matter specialists, economist in this case, would result a more appropriate outcome.

Although finding an appropriate method of teaching introductory economics to different majors is an important issue, not much effort has been given to this by researchers working on economic education. In this paper, we would like to make an effort to explore (i) the appropriateness of the content, breadth and depth of economic concepts among different disciplines, (ii) mode of delivery and teaching techniques suitable for different disciplines with varying objectives, (iii) the suitability of textbooks and teaching resources to the appropriate level, and (iv) the benefits of collaboration between economists and the respective disciplines for enhanced learning process. The entire analysis will be done in the context of a small undergraduate university perspective, where introductory economics courses are taught by economics instructors to its own major and minor as well as students enrolled in several other degrees, diploma or applied degree programs including sciences, business, engineering and other liberal arts. Relevant literature will also be looked at to substantiate the arguments made in this paper.

THE DIVERSE STUDENT POOL: A CHALLENGE

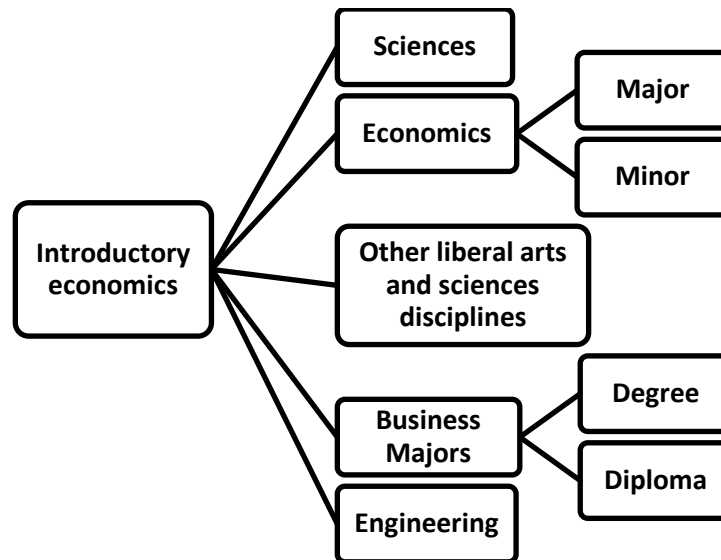
Students enrolled in introductory economics courses generally have a wide range of objectives and career motives. Although an economics instructor may tend to prepare his/her students for making them successful in undergraduate programs, and eventually to go to graduate school, the vast majority of students deviate from that objective. Most students from introductory class do not major in economics. Even those who major in economics, very few go to graduate schools. Only from large universities with strong academic, research and policy analyses components, certain number of students move forward to graduate studies leading to master or doctoral degrees. Thus, any effort to focus only on such students would be a clear disservice to others who constitute the vast majority.

Many students enrolled in introductory economics classes are either already in a non-economics major/minor or will decide at the end of first year to pursue disciplines other than economics. A large number of students go to business schools, some to other liberal art disciplines, sciences and engineering. Figure 1 presents a summary schematic diagram of such a situation.

The knowledge and skills students receive in the introductory economics classes can be used in several different majors and career paths. In certain circumstances, with undecided students, the concepts learned may become obsolete with no use except the usual day-to-day understanding of issues that relate to general citizenship. How much of the knowledge and skills get used and how much become obsolete depend on the content and nature of teaching and the student's determination to excel in the course. The commonly known Stigler hypothesis (Stigler, 1963) casted a doubt on the use and retention of information presented in introductory economics courses although later on Saunders (1980) concluded that the hypothesis was unduly pessimistic and introductory economics do have a long-lasting effect on students. However, the extent of this effect may not be the same for all as it depends on several factors. The discipline the student is majoring in is certainly an important factor. The kind of job the student is striding for is another factor. Whether the student's further study is on professional fields or higher studies in a basic social science discipline is another, among many others. We'll focus on two disciplines, business and engineering and how those affect teaching and learning outcomes of introductory economics.

FIGURE 1

SCHEMATIC DIAGRAM OF THE DIVERSE STUDENT BODY TAKING INTRODUCTORY ECONOMICS COURSES



A large number of students enrolled in introductory economics, major in different disciplines of business and management studies. Students pursuing a program in business have different expectations from economics courses, both in terms of its content and in terms of delivery of course materials. This apparently requires a separate set of syllabi, a different instructor, a different textbook and a different classroom setting. However, differences in these resources do not guarantee the appropriate delivery of the right content. The content has to fit with the objectives of the program, the level and delivery have to be congenial so that the students can find it interesting, the textbooks and supplementary reading materials have to be relevant and appealing to students. Miller (2000) suggested a curriculum change incorporating a cross-functional integration of economics into the business curriculum as a module. He also pointed out that although such integration is costly, the cost is easily outweighed by the benefits as it enriches students, economics faculty, business or engineering faculty and the institution as a whole.

INSUFFICIENT MOTIVATION: ANOTHER CHALLENGE

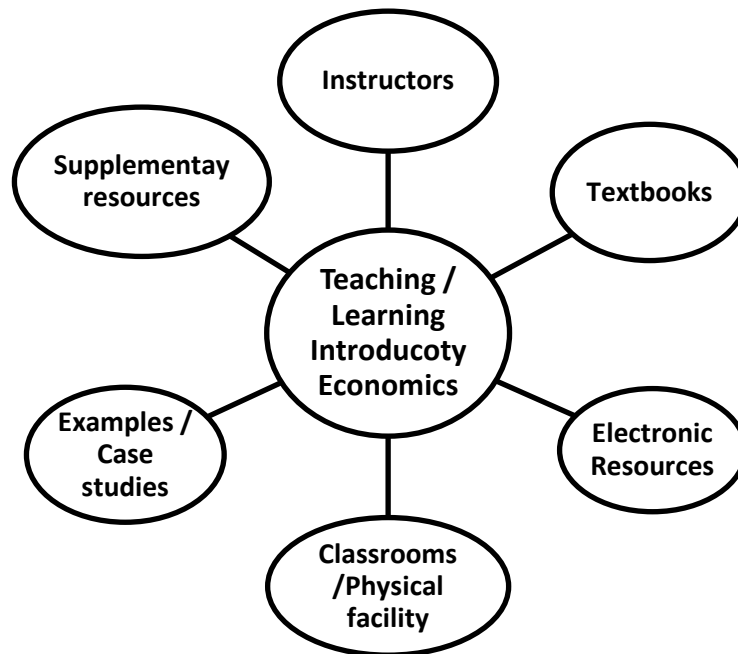
Another challenge stems from the diverse pool of students is insufficient motivation to learn. Many students take introductory economics not because they are fond of it, but because their programs require it. Such students see little use of these courses in their future profession and as such do not become motivated to learn. Later on, in the real life, however, they make many economic decisions where knowledge from these courses is useful. And by the time they find the use of economic principles, it is too late. Colonescu (2011) pointed out that many day-to-day economic decisions are made by non-economists or individuals with limited knowledge in economics primarily obtained through introductory economics courses.

Since the vast majority of students take only introductory economics courses in their lives, they are to be given skills that they can make use of it. Economics, as a subject matter dealing with ordinary business of life, should be providing such an opportunity to individuals intending to become astute citizens. Does our present offering of introductory economics courses provide that is an open question? And such a question requires thoughtful answers. One apparent test to address the question can be the motivation of students to learn economic principles. If our introductory economics courses are doing what they are supposed to be doing, then there should not be a problem of insufficient motivation.

Students' motivation to a course depends on several factors. The content, instructor, presentation method, textbooks, supplementary resources, electronic resources, examples and case studies, classroom

facilities etc. are a few to mention. Figure 2 provides a schematic diagram of such a situation. Improved motivation requires improvement of any or all of these factors. Introductory economics courses are not exceptions. Economics is often considered boring, dry and not relevant to real life situation (Armento, 1987; Mayhew et al., 1990; Salemi et al., 1996). Economics instructors need to work on all the factors to address this perception.

FIGURE 2
CONTRIBUTION OF DIFFERENT COMPONENTS IN TEACHING AND LEARNING
INTRODUCTORY ECONOMICS



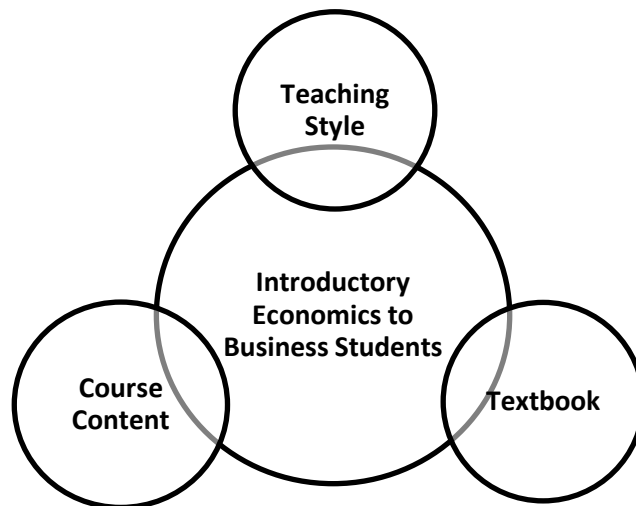
Efforts to make introductory economics more relevant to real life situation have been continuing. Textbooks have come a long way from using widgets and gadgets to illustrate economic principles to using real life case studies, policies and decisions. Flynn (2005), Anderson and Chasey (2006), Colander and McGoldrick (2009), Cohen and Howe (2010) and Madariaga (2010) are examples of making such efforts beyond conventional textbooks. These publications and the modernization of textbooks along with technological developments to address the generational preferences have been making significant contributions toward the progress of building introductory economics courses relevant to real life situations.

TEACHING ECONOMICS TO BUSINESS STUDENTS

Teaching introductory economics to business students is different from teaching the same to economics students. Even within business majors, teaching introductory economics courses to degree students would be different from teaching the same to diploma students in terms of course content and mode of delivery. Some diploma programs create a separate course on business economics to introduce basic economic concepts in a business environment. Students are introduced to both introductory microeconomic and macroeconomic concepts with less breadth and rigor. Often, they are exposed to common business topics to illustrate economics principles. Since this course and the textbook are prepared for business students and are not used for students in liberal arts degree programs, a discussion on this is not warranted. Rather, courses and textbooks used for students in economics, business, and other majors are our focus. Figure 3 presents a schematic diagram of areas where adaptations and improvements are needed in an

integrated way to make an introductory economics course more relevant and appropriate to business students.

FIGURE 3
AREAS OF ADAPTATION NEEDED TO MAKE AN INTRODUCTORY ECONOMICS MORE APPROPRIATE TO BUSINESS STUDENTS



In research intensive schools with large student pool in economics majors, the course content, teaching techniques and textbooks in introductory economics courses are commonly focused toward students majoring in economics. When the same course materials, teaching techniques and textbooks are used for business students, certain degree of modification/adaptation is necessary. While teaching business students, the instructor should have the freedom to present the appropriate content relating to the program. This does not mean to alter or modify the actual content completely but to make the content more appropriate by emphasizing the area more relevant to business students and de-emphasizing topics that are less relevant. This may include choice of vocabulary, use of case studies and examples that business students are familiar with. As a preparation for this course, the instructor needs to have ideas on what other courses the students take in the program so as to bring examples that relate to other courses. As an example, Sawyer and Sprinkle (2002) suggested a reverse approach to introduce international economics. First, they presented the figures of GDP, population, export and import of different countries and 50 US states, and then they introduced the concept of international trade and comparative advantage. They found that the approach was useful in increasing students' interest in international economics.

Principles and concepts covered in introductory courses are, in general, broad. There could be topics that are not very relevant to business majors. For example, social welfare implications of taxes and subsidies or price controls are of less important topics to a business manager, and a business student would find studying those redundant. Overly wide coverage of economic principles in introductory courses generates apprehension of business students toward economics courses. Even economics students find it hard to grasp the entire set of principles as Colander and Klammer (1987) observed that some graduate students in economics are confused about many principles and concepts they learn in their principles courses.

The second aspect is to use a teaching technique that seems more relevant to business students. Most business students at a particular stage of the program belong to cohorts, and they are well connected among them as they are together in several courses. A teaching method involving some students may make the entire cohort of students interesting. Becker (2001) and Hoyt (2003) emphasized on changing teaching style to make introductory economics more appealing to students. This problem of insufficient interest from students was identified even before by several economists (Armento, 1987; Mayhew et al., 1990; Salemi et

al., 1996). Economics instructors have been responding to this problem by making concerted efforts through the incorporation of various teaching techniques (Quddus and Bussing-Burks, 1997; Parks, 1999; Smith, 2002; Caviglia-Harris, 2003; Dickie, 2006; Vo and Morris, 2006; Van der Merwe, 2006, 2007). Woodward (2008) elegantly presented the differences in teaching techniques and course content between students of economics major and business major with respect to (i) purpose and objectives, (ii) relevancy and activity, and (iii) abstraction versus application. He suggested eight possible ways to improve teaching introductory economics to business students. These are (1) discarding the irrelevant content and exploring only those which are relevant to business students, (2) presenting economics principles from the viewpoint of a manager and not from the perspective of a general citizen or policy maker, (3) bringing activities in class and refrain from only chalk and talk, (4) using business acronyms and business terminologies instead of economics terminologies, (5) illustrating relevant examples and cases instead of a hypothesized example, (6) conferring with other relevant topics or subjects instead of presenting in isolation, (7) presenting economics ideas in a fun way that students will enjoy and learn, and (8) using media.

Another aspect of teaching introductory economics to business students is to select an appropriate set of teaching resources, textbook for example. For introductory economics courses, there are over a dozen textbooks to choose from. The instructor selects one based on his/her choice. Although the coverage in all these textbooks are more or less same, there are differences in rigor, approach of presentation, depth of discussion, arrangement of topics, use of examples to illustrate principles, etc. Some textbooks are more rigorous in theory, but others are more practical oriented. While judging economics textbooks, Dawson (2007) favored textbooks that introduce students conflicting ideas and views as those provide students choices. Although philosophically, this sounds fine for students in economics major, but a business student is better off having succinct and non-controversial information. Pyne (2007) after examining the impact of seven leading introductory economics textbooks on students' performance in higher level courses found it hard to refute the hypothesis that most textbooks produce more or less identical results in student learning. However, his studies were focused on the impact of higher-level economics course, not business courses.

TEACHING ECONOMICS TO ENGINEERING STUDENTS

Teaching introductory economics to engineering students is not the same as that to economics or business students. Although many similarities can be observed in the process of acquiring knowledge in economics and engineering, differences are not subtle. There are philosophical in approach of decision making. Engineering is a technical subject requiring decision making on physical aspects. Such a decision requires sufficient information on the desired output, appropriate process to achieve that and availability of resources. In economics, decision making process begins with an abstract model through reasoning and available theory and then collects information to prove or disprove that. Engineering, on the other hand, tend to shy away from abstraction and focus primarily on physical resources. A graduate school professor once mentioned "An engineer can easily become an economist, but an economist cannot easily become an engineer." Rashid (2001) provides a comprehensive relational analysis between engineers and economists in historical and evolutionary perspective. Although his analysis was not focused on introductory economics courses taught to students interested in engineering, but it certainly sheds light in the differences in development of ideas and scientific processes.

Most engineering schools teach introductory economics course to their students using their own instructors. In some ways, the thought process of engineers and economists is similar. Purvinis (2002) examined the similarities and differences in the use of mathematical procedures in economics and engineering. In quantitative terms, engineers are more inclined toward mathematical relations as they deal with physical aspects; whereas economists are more inclined toward statistical or probabilistic quantification as they have to deal with human component of decision making. What is more though, economics has other non-quantitative and philosophical aspects, which are absent in engineering. The content of introductory economics courses for engineers has to be different from economics and business majors simply because of the nature of the discipline. An engineer may need to do a detailed cost analysis of a physical plant but will not have to be aware of the social consequence in terms of the reduction of societal benefit or consumer

surplus. Engineering economics also tends to include financial and investment decision analysis that economists often shy away from, until at a senior level. Table 1 provides a comprehensive chart of general contents covered in introductory economics, business economics and engineering economics.

TABLE 1
COMPARISON BETWEEN OVERALL CONTENTS IN ECONOMICS, BUSINESS ECONOMICS AND ENGINEERING ECONOMICS COURSES

Economics	Business Economics	Engineering Economics
Basic principles	Economic decisions	Making economic decisions
Economic thought	Markets	Cost and cost estimates
Demand, supply and market	The firm	Interest rates and equivalences
Elasticity	Firm's production, cost and revenue	Present worth analysis
Market and government policies	Firms in competitive, monopoly, monopolistic competition & oligopoly markets	Cash flow analysis
Consumer, producer and market efficiency	Market power & concentration	Rate of return analysis
Firm's production, cost & revenue	Investment policy and appraisal	Marginal analysis
Firms in competitive, monopoly, monopolistic competition & oligopoly markets	Government policies on businesses	Risk and uncertainty of events
Factor markets	Factor markets	Income, depreciation and cash flow
International trade	Macro-economy – GDP, price levels	Applications of economic valuation
Market failure – externalities and public goods	Unemployment, inflation	Capital budgeting decisions
Macro-economy - GDP, price levels	Economic growth & business cycle	Tax, subsidy and cash flow
Unemployment, inflation	Fiscal and monetary policy	Economic analysis of public sectors
Aggregate supply and aggregate demand	International trade	
Economic growth, fiscal and monetary policy	Balance of payment & exchange rate	
Inflation and unemployment control	Trans-nationalization & Globalization	
Economy in the long run		

In terms of presentation, engineering economics requires more demonstration and exercise simply because of its more numerical content. Dahm (2003) presented a simulated investment example in his class which was well received by students. Similar experiments, demonstrations or simulations have been tried in other introductory courses. In-class experimentations and demonstrations (Dickie, 2006; Hawtrey, 2007; Sawler, 2007; Mitchell, 2008), introducing group learning techniques and incorporating case studies in teaching modules (Smith, 2007) are some of many efforts made in the past by economics instructors. However, discipline specific examples are certainly more appealing to students, and in that, instructors teaching engineering economics course should find examples within the field of engineering.

As for the textbooks, most engineering economics courses use separate textbooks for engineering students. The rationale is primarily driven by the content. The content between economics and business economics are very close, but that of engineering is quite different.

WHAT CAN AND SHOULD BE DONE

From the previous sections, it is clear that the fundamental principles of economics are universal, but the needs of different programs are different. Economics majors desire to learn economics principles to form a solid foundation so as to build on for further development in theory, methodology and application to any field, be that health care, labor, natural resource, environment, etc. Business economics, however, aspires

for a foundation that supports business decision making and management, not necessarily only profit seeking motive. Engineering economics intends to make a foundation on the physical decision making based on the real world with some degree of uncertainty.

No matter where the application is, the fundamental basis is the principles of economics. Collaboration between economists and the subject matter specialists is a necessary component of successful teaching and learning of introductory economics. Now the question may come, who should take the lead? Douglas (1979) rightfully pointed out that the initiative lies with the economists as they are ones having expertise on the principles and concepts. Economists have taken a pro-active role in making economics courses more relevant and applicable to the receivers, in this case the relevant programs, business, engineering, etc. Economics courses are to be taught by economists. However, economics courses to business students should be taught by instructors who have sufficient background and interest in businesses and business programs. Similarly, economics courses to engineering students should be taught by instructors who have genuine interest and knowledge of engineering programs. Both economists and the relevant programs should conduct extensive research to improve teaching and learning of introductory economics to majors other than economics, without which an appropriate content and method of teaching will not be found.

CONCLUSION

Introductory economics is taught to students who intend to major in a variety of disciplines. The content of introductory economics courses vary depending on the discipline although the variation is not always extensive. However, the nature of such variation is sufficient to pay attention to appropriateness of content according to needs and desires of the program. The teaching methods should relate economics principles with the discipline or program so that the students are receptive. The selection of textbook is another aspect that requires a great deal of thought. The instructor, an expert on economics, and the representative of the respective discipline (perhaps, the program leader who is an expert on the discipline), should collaborate to find appropriate teaching content, technique or method, and textbook. This collaboration is important and the economics instructor should take the lead. The end result of such initiatives will be a higher level of satisfaction for both students and instructors. This would also result in achieving learning outcomes that match student needs and at the same time maintain the core competencies required in an introductory economics course.

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